IN THE CLAIMS:

Claims 1-42 (Cancelled).

43. (New) A method of forming a diffusion hole in a fired ceramic which method comprises (i) forming a green ceramic structure from an intimate mixture of a powder of the ceramic and a binder, which structure incorporates at least one organic fibre or other organic element passing from one side of the ceramic structure to the other in a straight or non-straight path and (ii) firing the green ceramic structure at an elevated temperature to cure the ceramic and to destroy the binder and the organic fibre or other organic element.

44. (New) A method according to claim 43 in which the binder is a water-soluble or water-swellable polymer.

45. (New) A method according to claim 43 in which, where a fibre is employed, the diameter of the hole after firing is greater than 10 microns.

46. (New) A method according to claim 43 in which, where a fibre is employed, the diameter of the hole after firing is in the range 25 to 200 microns.

47. (New) A method according to claim 43 in which the green structure is fired at a temperature in excess of 1000°C.

48. (New) A method according to claim 43 in which the ceramic is an oxygen-ion conductor.

49. (New) A method according to claim 48 in which the oxygen-ion conductor is a 4-valent metal oxide stabilised with a three- or

two-valent metal oxide.

50. (New) A method according to claim 48 in which the 4-valent metal oxide is selected from zirconium dioxide, cerium dioxide and hafnium dioxide.

51. (New) A method according to claim 49 in which the 3-valent metal oxide is yttria.

52. (New) A method according to claim 50 in which the oxygen-ion conductor is zirconium dioxide stabilised with yttria.

53. (New) A method according to claim 49 in which the crystalline form of the oxygen-ion-conducting ceramic is cubic.

54. (New) A sensor which comprises a hollow cylinder with end caps enclosing an internal volume, one end of the cylinder being a sensor element comprising a disc of oxygen-ion-conducting ceramic having a porous electrode positioned at least on its internal surface and the cylinder having at least part of its structure formed of a ceramic with at least one diffusion hole formed in its structure by the method of claim 1, there being an electrical heating element able to heat the disc of oxygen-ion-conducting ceramic.

55. (New) A sensor which comprises a hollow cylinder with end and intermediate caps enclosing at least two internal volumes, the cylinder having at least part of its structure formed of a ceramic which has one or more holes formed in its structure by the method of claim 1, one end of the cylinder being a sensor element comprising an oxygen-ion-conducting disc which has a porous electrode positioned on each surface, there being an electrical heating element able to heat the oxygen-ion-conducting disc.

56. (New) A sensor according to claim 54 in which the cylinder is formed of an oxygen-ion-conducting ceramic with a diffusion hole through an end or side of the cylinder.

57. (New) A sensor according to claim 54 in which the electrodes are made of a porous platinum or a porous platinum/oxygen-ion-conductor cermet.

58. (New) A sensor according to claim 57 in which the oxygen-ion-conductor in the cermet is of the same composition as that used in the green ceramic to form the electrolyte of the sensor element.

59. (New) A sensor according to claim 54 in which the heating element is in the form of resistance wires in contact with, embedded in or adjacent to the disc of oxygen-ion-conducting ceramic and an electric current can be fed to the heating element by means of platinum or other metal wires.

60. (New) A sensor according to claim 54 in which the heating element is a circular or square ceramic disc onto which is printed a metal film to carry the electrical current, in contact with, or adjacent to the disc of oxygen-ion-conducting ceramic or the sensor element.

61. (New) A sensor according to claim 54 in which the heating element is a circular or square alumina disc onto which is printed a metal film to carry the electrical current, in contact with, or adjacent to the sensor element.

62. (New) A sensor according to claim 54 in which there are two heating elements, one on either side of the sensor element, to form a sandwich construction and in which the heating elements are connected in series or parallel.

63. (New) A sensor according to claim 54 in which a constant current can be passed through the ceramic disc via porous electrodes on each side of said disc and a voltage monitored.

64. (New) A sensor according to claim 54 in which the electrodes on the ceramic disc are on open-circuit and a voltage measured between said electrodes.

65. (New) A method of making a sensor incorporating a sensor element which method comprises (i) placing the sensor element on or adjacent to a support disc having a number of electrically isolated conductive wires/posts passing through and fixed to it, the wires/posts being positioned in a substantially circular configuration of diameter larger than the dimensions of the sensor element with the sensor element positioned within the circle formed by the wires/posts and (ii) passing the wire/posts up the sides of the sensor element to grip the sensor element and (iii) connecting the wire/posts to electrical contacts for electrodes and for a heating element.

66. (New) A method of making a sensor as claimed in claim 65 incorporating a sensor element which method comprises (i) placing the sensor element on or adjacent to a support disc having a number of electrically isolated conductive wires/posts passing through and fixed to it in a non-circular configuration, the wires/posts being bent into a substantially circular configuration on the side of the support disc used to incorporate the sensor element and of diameter larger than the dimensions of the sensor element with the sensor element positioned within the circle formed by the wires/posts and (ii) passing the wire/posts up the sides of the sensor element to grip the sensor element and (iii) connecting the wire/posts to electrical contacts for electrodes

and for a heating element.

67. (New) A method of making a sensor according to claim 66 in which the sensor element is placed on thermal insulating material and there is at least one heating element in contact with adjacent to or forming part of the sensor element.